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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
10494.0002-00000

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on _____

Signature _____

Typed or printed name _____

Application Number	§ 371 Date
10/578,578	May 05, 2006

First Named Inventor
ERIKSEN, Andre Sloth

Art Unit	Examiner
3744	WALBERG, Teresa J.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

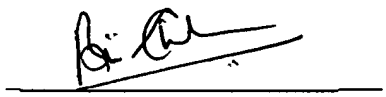
I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.

☒ attorney or agent of record.
Registration number 63,684

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____


Signature

Biju I. Chandran
Typed or printed name

202.408.4230
Telephone number

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Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 form is submitted.

Applicants request a pre-appeal brief review of the rejections set forth in the final Office Action mailed March 20, 2009 ("Office Action"). Applicant has met each of the requirements for a pre-appeal brief review of rejections set forth in an Office Action. See Official Gazette Notice, July 12, 2005.

I. Status of the claims.

In the Office Action, claims 103, 104, 106, and 107 were rejected under 35 U.S.C 103(a) as being unpatentable over U.S. Patent Number 6,019,165 issued to Batchelder ("Batchelder") in view of U.S. Patent Publication US 2003/0056939 A1 to Chu et al. ("Chu"), U.S. Patent Publication US 2006/0169440 to Chou et al. ("Chou"), and U.S. Patent Publication US 2004/0141275 to Athari ("Athari"). Claims 70-84, 87, 105, and 108-112 were rejected under 35 U.S.C 103(a) as being unpatentable over Batchelder in view of Chu, Chou, Athari, and U.S. Patent Number 6,114,827 issued to Alvaro ("Alvaro"). Claims 85, 86, and 88 were rejected under 35 U.S.C 103(a) as being unpatentable over Batchelder, Chu, Chou, Athari, Alvaro and further in view of U.S. Patent Number 6,668,911 issued to Bingler ("Bingler"). Of these claims, claims 70, 103, and 108 are independent.

II. The rejection of independent claims 70, 103, and 108 is defective because modifying Batchelder to mechanically couple/integrate the impeller with the rotor is improper.

Independent claims 70, 103, and 108 disclose a cooling system for a computer system including, among others, a pump with a rotor, a stator, and an impeller. Claim 70 recites that the "impeller [is] mechanically integrated with the rotor," and claims 103 and 108 recite that the "impeller [is] mechanically coupled with the rotor."

In the Office Action, the Examiner relies on the combination of Batchelder and Chu for teaching a cooling system with a pump having an impeller mechanically integrated with the pump rotor. See, Office Action, pg. 7. Batchelder discloses an active heat spreader plate ("20" of Fig. 2 of Batchelder) with a heat transfer fluid "***hermetically*** enclose[d] [in] one or more interior cavities." Col. 4, lines 9-11 (emphasis added); See also Col. 4, ln. 63 - col. 5, ln. 11. "Hermetic" means "air tight." See Merriam-Webster's online dictionary at http://www.m-w.com/dictionary/hermetic. That is, the internal cavities containing the heat transfer fluid are maintained in an air tight manner in the heat spreader plate of Batchelder. The importance of maintaining the internal cavities of the active heat spreader plate in an air tight, or hermetic manner, is emphasized in Batchelder. Batchelder, in column 5 lines 37 - 59, describes techniques to fill the

heat spreader plate 20 with heat transfer fluid without destroying the hermeticity of the heat spreader plate. These teachings repeatedly and consistently stress the importance of maintaining the heat spreader plate 20 in an air-tight or hermetic manner. In order to circulate the heat transfer fluid within the heat transfer plate 20, an impeller 54 is embedded in the heat transfer plate 20. To rotate the impeller 54 while maintaining the hermeticity of the heat transfer plate 20, the impeller 54 is magnetically coupled to a rotor driven by a motor.

Chu discloses a cooling unit 10 with a pump having an impeller mechanically integrated with a rotor via a shaft. The Examiner alleges that it would have been obvious for a person of ordinary skill in the art to substitute the magnetically coupled impeller of Batchelder with a mechanically integrated impeller, "because the substitution of one known element for another would have yielded predictable results." Pg. 4, Office Action.

A. It would not have been obvious to an Ordinarily Skilled Artisan to substitute the mechanically coupled impeller of Chu for the magnetically coupled impeller of Batchelder because Batchelder clearly teaches away from such a combination.

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant." In re Gurley, 27 F.3d 551, 553 [31 USPQ2d 1130] (Fed. Cir. 1994) (internal citations deleted); see also KSR, 127 S. Ct. at 1739–40 (explaining that when the prior art teaches away from a combination, that combination is more likely to be nonobvious).

Heat spreader plate 20 of Batchelder is a hermetically sealed device with an impeller 54 and a heat transfer fluid contained therein. Mechanically coupling the rotor to the impeller 54 via a shaft, as suggested by the Examiner, would destroy hermeticity, and require the use of rotary seals and/or other sealed shaft feed through mechanisms to drive the impeller 54 without allowing leakage of the heat transfer fluid from the heat spreader plate 20. In Batchelder, the impeller is magnetically coupled to the rotor to eliminate the "reliability disadvantage" that arises when rotary seals and sealed shaft feed-throughs are used to mechanically couple a rotating shaft to an impeller contained in a liquid containing enclosure, in a leak-free

manner. Batchelder, col. 1, ln. 62 - col. 2, ln. 10. The current application discloses a liquid cooling system for a computer which is both efficient and reliable. More particularly, a liquid cooling system which does not have a "risk of leakage of the cooling liquid from the system." Specification, para. 0004, 0067. Given this result sought by the Applicant, Batchelder explicitly teaches away from modifying the heat spreader plate of Batchelder by mechanically coupling the impeller to the rotor, since the use of rotary seals and/or other sealed shaft feed through mechanisms to deliver mechanical power to the impeller without causing a leak imposes a reliability disadvantage. Batchelder, col. 2, lns. 4-10. Given these explicit teachings of Batchelder, a person of ordinary skill in the art would be discouraged from incorporating a mechanically coupled rotor and impeller in the heat spreader plate of Batchelder.

Additionally, passing a shaft through the top surface 26 of the heat spreader plate 20, to mechanically couple to the impeller to the rotor will allow air to enter the internal cavities of Batchelder thereby destroying the hermeticity, and making the heat spreader plate unsatisfactory for its intended purpose. As M.P.E.P. states "[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." M.P.E.P. 2143.01 V.

In response to these arguments, the Examiner, without citing any references, asserts that (*see, e.g.*, page 7 of the Office Action mailed on April 24, 2008 and Record of Personal Interview on page 11 of the Reply to Office Action filed on December 18, 2008) "mechanically and magnetically coupled impellers are recognized in the art as being equivalent," and are "known in the art to be interchangeable." The Applicant disagrees with these unsupported assertions. Since Batchelder teaches away from using shaft feed-throughs and rotary seals to deliver mechanical power to the fluid, a person of ordinary skill, upon reading Batchelder, would be discouraged from mechanically coupling the rotor to the impeller to produce a cooling system which is both efficient and reliable.

B. Hindsight bias was applied by the Examiner because the problem solved by the invention was viewed in a different context by the cited prior art, and from that context, the solution would not have been obvious.

The current application discloses a cooling system where a cooling liquid is circulated in a closed loop to remove heat from an electronic component, such as a CPU. Specification, para. 0003. A focus of the current application is to increase the efficiency and reliability (for example, decrease the risk of leakage

of the cooling liquid) of the liquid cooling system. Specification, para. 0004. In some embodiments, the increased efficiency of the cooling system is achieved by, among others, using an impeller designed for one way rotation mechanically coupled with an AC motor and operated in a prescribed manner. Operating the cooling system in this prescribed manner results in the most efficient circulation of cooling liquid with the lowest possible energy consumption. Specification, paras. 0061-0067, 0136-0137.

Batchelder also discloses a cooling system where a cooling liquid is circulated to remove the heat from an electronic component. To increase the efficiency and reliability of the cooling system, Batchelder focuses on eliminating the use of sealed shaft feed-throughs and rotary seals to deliver mechanical power to circulate the cooling liquid. Batchelder, col. 2, lns. 2-5, col. 50-51. That is, while Batchelder recognizes and addresses the problem solved by the current disclosure, Batchelder views the problem in a different context, and focuses on, among others, eliminating the "reliability disadvantages" associated with sealed shaft feed-throughs and rotary seals to increase the efficiency of the cooling system. With the elimination of sealed shaft feed-throughs and rotary seals, mechanical coupling of the impeller to the rotor is not a practically available option in the cooling system of Batchelder. Absent impermissible hindsight, a person of ordinary skill in the art at the time of the invention would not have thought of substituting the magnetically coupled impeller with a mechanically coupled impeller, based on the teachings of Batchelder.

III. The rejection of independent claims 70, 103, and 108 is defective because Athari does not disclose an AC motor, where "an AC voltage to operate the motor [is] obtained by converting a DC voltage output of a DC power supply of the computer system to the AC voltage."

Each of independent claims 70, 103, and 108 disclose, among others, an AC motor, where "an AC voltage to operate the motor [is] obtained by ***converting a DC voltage output*** of a DC power supply of the computer system to the AC voltage." In the Office Action, the Examiner alleges that Athari discloses a DC power supply "to power an AC motor (para. 0013, last sentence), the AC voltage to operate the motor being obtained by converting a DC voltage (para. 0013, last sentence)." Office Action, pg. 4, last para., and pg. 7, last para.

Athari discloses a switching mode power supply (SMPS) to convert "battery DC voltage into a lower voltage DC power supply voltage for the laptop computer." Athari, para. 0003. In Athari, the input to the SMPS is DC battery voltage and the output from the SMPS may be either DC or AC. If the SMPS

output is AC, then the SMPS is called an inverter. Athari, para. 0009; see also discussion and technical literature cited in pgs. 3-4 of Request for Reconsideration filed on April 1, 2009. If the SMPS is an inverter (such as the SMPS driving the AC motor of para 0013), then the input to the SMPS is DC battery voltage and the output from the SMPS is AC voltage. That is, in such an embodiment, the output of the SMPS is not DC voltage. Therefore, in an embodiment of Athari where the SMPS is an inverter, "an AC voltage to operate the motor" is not "obtained by ***converting a DC voltage output*** of a DC power supply of the computer system to the AC voltage." Rather, the output of the SMPS (which the Examiner considers to be the DC power supply recited in these claims) is AC voltage which may be directly used to drive the AC motor. That is, contrary to the Examiner's allegation, Athari does not disclose that "an AC voltage to operate the motor [is] obtained by converting a DC voltage output of a DC power supply of the computer system to the AC voltage," as recited in independent claims 70, 103, and 108. Since AC voltage is directly obtained as the output of the inverter SMPS, Athari does not teach a DC voltage output of a DC power supply and converting this DC voltage output to AC voltage. There is no elaboration in the Examiner's reasoning as to what would motivate a person of ordinary skill in the art at the time of the invention to modify Athari to include a DC power supply that produces a DC voltage output (i.e., a transformer) and then converting this DC voltage output to AC voltage (i.e., with an inverter).

In response to these arguments in the Request for Reconsideration filed on April 1, 2009, the Examiner, in an Advisory Action mailed on April 8, 2009, alleges that "Athari teaches using a DC power supply connected to an inverter to supply power to an AC motor." Applicant disagrees. Athari does not disclose a DC power supply connected to the inverter to supply power to the AC motor as alleged by the Examiner. Instead, in an embodiment of Athari where the SMPS is an inverter, the SMPS directly outputs an AC voltage which may be used to power the AC motor.

At least for these additional reasons, independent claims 70, 103, and 108, and the claims that depend therefrom are allowable over the cited prior art.

IV. Conclusion

In light of the above arguments, it is respectfully requested that the rejections of the claims be withdrawn and the application passed to issue.